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ABSTRACT

The Texas Educational Assessment of Minimum Skills (TEAMS) was developed by the Texas Education Agency (TEA), in response to Texas House Bill 72 (1984), which mandated a new basic skills assessment program for mathematics, reading, and writing at grades 1, 3, 5, 7, 9 and 11. This document is one in a series of Instructional Strategies Guides designed to familiarize Texas educators with the types of strategies employed in assessing learner mastery of TEAMS objectives and to provide suggested instructional activities that can be used to promote mastery of those objectives. This guide focuses on the TEAMS mathematics objectives for grade 1. It provides a detailed description of the test items used to measure each mathematics objective. The eight objectives are subsumed under five skill areas: (1) number concepts (number sequence, place value, number comparison); (2) computation (addition, subtraction); (3) problem solving (word problems involving addition/subtraction); (4) measurement (time); and (5) geometry (geometric shapes). The following information is provided for each objective: (1) a description of the objective; (2) a sample item; (3) test questions; (4 a description of responses to each multiple choice or open-ended test item; (5) answer analysis for sample items; (6) instructional emphases; and (7) possible instructional activities. (JAZ)

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TEAMS

INSTRUCTIONAL STRATEGIES GUIDE

MATHEMATICS

GRADE 1

TEXAS EDUCATION AGENCY
William B. Travis Building
1701 North Congress Avenue
Austin, Texas 78701

August 1986

TM 870 022

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TEAMS INSTRUCTIONAL STRATEGIES GUIDE

MATHEMATICS

GRADE 1

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INTRODUCTION

During 1980-1985 the Texas Education Agency (TEA) administered a criterion-referenced testing program, the Texas Assessment of Basic Skills (TABS). That program was designed to measure minimum skills in mathematics, reading, and writing at Grades 3, 5, and 9. In July 1984, under the provisions of House Bill 72, a new basic skills assessment program was mandated in mathematics, reading, and writing at Grades 1, 3, 5, 7, 9, and 11. In response, development of the Texas Educational Assessment of Minimum Skills (TEAMS) was instituted by TEA during the 1985-1986 school year.

School district personnel from across Texas participated in all aspects of the development of TEAMS. Basic skills objectives were selected after a thorough review of the State Board of Education Rules for Curriculum, GE4 450 01 (Essential Elements). Under TEA supervision measurement specifications and test items were developed for each objective. Statewide field testing was conducted to ensure the quality of test items. The State Board of Education then approved the TEAMS tests for administration.

Because of the significance of the TEAMS program, TEA is providing Texas educators with instructional strategies guides for all objectives measured on each TEAMS examination. These guides describe the TEAMS objectives as well as instructional considerations and activities that can be used to promote mastery of TEAMS objectives.

This instructional strategies guide focuses on the TEAMS mathematics objectives for Grade 1. It provides a detailed description of the test items used to measure each mathematics objective. In addition, a brief instructional analysis is provided for each objective as are instructional activities that can help students master the objective.

Texas educators will undoubtedly vary in the ways they wish to promote learner mastery of the TEAMS objectives. Thus, the instructional components of this guide are <u>not</u> intended to be prescriptive. Teachers should view suggested activities as potential approaches that lead to mastery of the TEAMS objectives.

Components of the Instructional Strategies Guide

Eight TEAMS mathematics objectives are measured at the first grade level. These objectives are subsumed under one of five skill areas. The distribution of mathematics objectives by skill area is shown on the next page.

SKILL AREA	OBJECTIVE
Number Concepts	Number Sequence Place Value Number Comparison
Computation	Addition Subtraction
Problem Solving	Word Problems: Addition/Subtraction
Measurement	Time
Geometry	Geometric Shapes

This guide provides the following information for each of the mathematics objectives included in the TEAMS Grade 1 test.

Description of the objective. This section provides a succinct overview of the objective's focus.

Sample item. An illustrative sample item follows the description of each objective. This item is consistent with the test specifications for the objective, hence is representative of the TEAMS items used to measure students' mastery of the objective.

Test questions. To provide a more detailed view of how each TEAMS objective is assessed, the next section provides a description of the test question. Grade 1 number sequence and place value items present a question that requires an open-ended response. All of the other first grade mathematics items present a stimulus which precedes three answer choices.

Answer choices. The next section deals with the response to each multiple-choice or open-ended test item. For multiple-choice items, important characteristics of the answer choices are described.

Answer analysis for sample item. An analysis of the answer choices from the sample item is then provided for objectives measured by multiple-choice items, that is, all objectives except number sequence and place value. This analysis explains why the correct answer is right and why the incorrect answers are wrong.

Instructional emphases. Considerations relevant to the design of instructional sequences for each TEAMS objective are described in this section. These instructional analyses are not intended to represent the only important points associated with instruction aimed at a particular objective. However, it is hoped that these discussions will stimulate educators' consideration of each objective.

Possible instructional activities. A final section discusses several instructional activities for each objective that Texas educators may consider as they organize their instructional plans.

Use of the Instructional Strategies Guide

This TEAMS instructional strategies guide is designed to accomplish two goals. First, the guide enables Texas educators to become familiar with the types of strategies employed to assess learner mastery of the TEAMS Grade 1 mathematics objectives. Educators who wish to learn more about how the TEAMS objectives are tested should consult the TEAMS objectives and measurement specifications available at cost from TEA. The level of detail provided in this instructional strategies guide should provide sufficient information for educators to design effective instructional sequences. Second, each instructional strategies guide provides suggestions for instructional activities that can be used to promote mastery of TEAMS objectives.

The specific setting in which a given district chooses to provide instruction in the TEAMS objectives will influence the way in which the materials in this guide can be employed. The format of the guide permits flexible use.

General Nature of the Test Items

The TEAMS Grade 1 mathematics objectives, with the exception of number sequence and place value, are measured by multiple-choice items that consist of a stimulus followed by three answer choices, one of which is correct. The stimulus, depending on the objective, presents a numeric problem, a word problem, or a pictorial display. The number sequence and place value objectives present a display and require students to write the correct answer. The problems are similar to those that students encounter in school, at home, or in their community.

SKILL AREA: NUMBER CONCEPTS

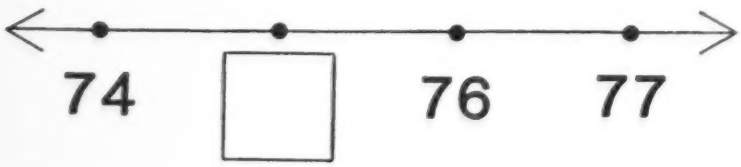
The skill area of number concepts includes three objectives: number sequence, place value, and number comparison. Students will be presented with test items which require writing a missing number on a number line, writing the number of tens and ones shown in a place value model display, and selecting the largest or smallest number from three numbers.

Objective 1: Identify the correct solution to a problem involving number sequence.

This objective requires students to write a missing number that falls between, immediately before, or immediately following numbers on a number line.

Sample Item

Teacher says: "Look at the number line. A number is missing. Write the missing number in the box."



Test Questions

1. Students will be given oral instructions to write the missing number in the box.

2. A test item will consist of a number line with three whole numbers and one missing number. The missing number will fall between, immediately before, or immediately following a consecutive series of numbers on a number line.

3. Eligible numbers will be whole numbers from 1 through 99.

Answer Choices

1. The correct answer will be the number that completes the number line.

2. The correct answer may be written in numeric or word form. Reversals of correct single numerals will be considered correct responses, (for example, Ɛ, ㄐ).

3. Incorrect answers will be any number other than the correct missing number. Reversals in the order of the numbers in two-digit numbers will be scored as incorrect.

Answer Analysis for Sample Item

1. The correct answer is the number 75.

2. Incorrect answers will be any response other than "75" or seventy-five with the exception of single digit reversals within the number 75 (for example, ↾ƨ).

Instructional Emphases

To master this skill, students must be familiar with the number line and know the order of numbers from 1 to 99. It is important for students to realize that numbers on the number line are read from left to right and are shown sequentially in order from the least to the greatest.

Although students may be able to count without interruption from 1 to 99, they may experience some difficulty identifying missing numbers printed out of sequence. Activities which require students to practice number order starting with numbers other than 1 should help promote student mastery of this skill. Activities emphasizing sequence may also be necessary to familiarize students with the concept of before, after, and between numbers.

Possible Instructional Activities

Number Shuffle

On index cards or 3" x 5" pieces of oaktag, print 20 numbers in sequential order (for example, 10-30, 30-50). Direct students to shuffle the cards, then arrange the numbers in sequential order from the least to the greatest. You may wish to make several 20-card sets to provide practice with all numbers from 1 through 99.

Number Board

On a 20" x 30" piece of heavy cardboard, make 10 rows of boxes, each row containing 10 boxes. Each box should be approximately 2" x 3". Print the numbers 1 through 100, in sequence, with one number per box. Each day, tape pieces of colored paper over several randomly selected numbers. Ask students to identify the missing numbers.

1	2	3	4	5	6	7	8		10
11	12	13	14	15	16	17	18	19	20
21	22	23		25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47		49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85		87	88	89	90
91	92	93	94	95	96	97	98	99	100

Connect The Dots

Make an outline of a picture with dots. Print a number next to each dot. Students draw lines connecting the dots according to number sequence. The scene or object outlined will become apparent when students connect the dots in the correct number order.

Order Riddle

This activity provides students with an opportunity to practice identifying a number that falls between two given numbers. The teacher starts the game by saying "I am thinking of a number between (number before number in question) and (number

after number in question). For example, "I am thinking of a number between 6 and 8." Teacher calls on a student volunteer for the answer. If the student answers correctly, then that student gets a turn to think of a number riddle to present to the class.

Before and After

Print a number on the chalkboard. Draw a blank line before and after the number. Call on a student volunteer to come to the board and fill in the blanks with the appropriate numbers to complete the number sequence. Have the other students in the class check the answers on a number line.

Musical Math Chairs

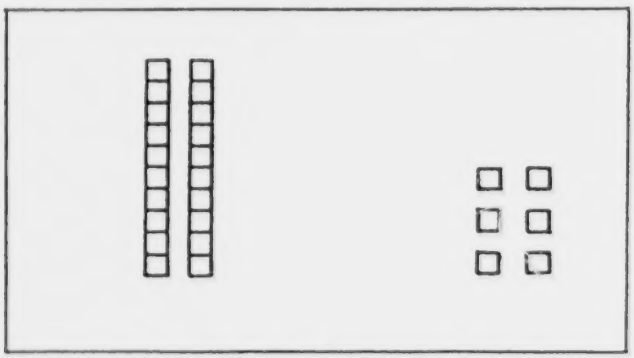
Produce several sets of 10 individual cards with large numbers on each card. Each set should form a sequence such as 1 through 10 or 11 through 20. Place 10 chairs in a row at the front of the class. Select 10 students to participate. Give each student a number card from one set (in random order) and indicate the sequence (for example, 1 through 10) on the chalk board. As you play music, students walk around the chairs. When the music stops, students are to seat themselves in correct sequence.

Objective 2: Identify the place value for a given problem.

This objective requires students to write the number of tens and ones shown in a place value model display.

Sample Item

Teacher says: "Look at the picture. How many tens and ones are there? Write the number of tens and ones on the lines."



_____tens _____ones

Test Questions

1. A test item will be a pictorial display composed of blocks grouped by tens and single blocks. Students will be given oral instructions to write the number of tens and ones shown in the place value model display.

2. Eligible numbers will not exceed 99.

Answer Choices

1. The correct answer will be the number of tens and ones shown in the display.

2. The correct answer may be written in numeric or word form. Reversals of correct single numerals will be considered correct answers (for example, or).

3. Incorrect answers will be any of the following types:

   a. Incorrect Number: At least one of the written numbers is incorrect.

b. Missing Number: At least one of the numbers for either the tens or ones place value is missing.

c. Incorrect Line: The numbers are written on the incorrect place value line (e.g., the correct number is 21, response is 1 tens 2 ones).

Answer Analysis for Sample Item

1. The correct answer is 2 tens 6 ones.

2. Incorrect answers will be any response other than 2 tens 6 ones or two tens six ones with the exception of single digit reversals for the numbers 2 and 6.

Instructional Emphases

Students should exhibit an understanding of numbers and what numbers stand for before they are introduced to the concept of place value. Students make sense of what numbers represent by counting concrete objects (e.g., blocks, beads, cubes). When introducing place value, provide opportunities for students to make concrete representations of two-digit numbers by showing the number of objects in the ones place and the number of objects in the tens place.

Explain to your students that it is easier to count large numbers of objects by putting them in groups of ten. Using blocks, ice-cream sticks, or some type of manipulative, have students count objects into groups of ten. Explain that each group is thought of as one ten. Objects left over that do not make a group of ten are counted separately as ones. Give students practice counting out groups of tens. Have them determine how many tens there are and the number that is represented (for example, 5 tens means fifty). As the next step, have students use manipulatives to represent numbers with digits in both the tens and ones place.

Once students are familiar with the concept of place value, introduce them to the place value model display used in the TEAMS test items and to the format of writing numbers as _____ tens and _____ ones. Direct students to count the number of tens and ones in the place value model. Students should write the number of tens on the blank line before the word tens and the number of ones on the line before the word ones. To emphasize the meaning of each place value, use manipulatives to show the number of objects represented by each digit. You may wish to demonstrate the importance of recording the number of tens and ones in the appropriate spaces by using manipulatives to show how number values change when numerals are written in the wrong place value spaces (for example, 26 becomes 62).

Possible Instructional Activities

Mystery Count

Place objects representing different numbers in separate boxes. For example, 23 beads in one box, 46 sticks in another box, etc. Direct students to count the number of objects in each box, then write the number of tens and ones on a piece of paper.

_____ tens	_____ ones	beads
_____ tens	_____ ones	sticks

Guess the Number

Put a different number of marbles or flat sticks in a clear container each day. Direct students to look at the jar, then guess how many objects are in the jar. Once students have written down their guesses in the form of _____ tens _____ones, ask a student volunteer to count the objects in the jar, grouping the objects by tens. The student in the class with the closest guess to the actual number of objects in the jar gets to count the objects the next day.

Ringing Rows of Numbers

Print rows of six two-digit numbers. The numbers in each row should contain one numeral that is common to all. Direct students to circle the numbers that have the specified numeral in the tens place. As a separate activity, students can circle the numbers that have the specified numeral in the ones place.

Circle numbers with "2" in the tens place.

(23) 42 (28) 12 62 (20)

Circle numbers with "1" in the ones place.

(51) 10 16 (21) 19 (81)

Number/Model Match

On 3" x 5" index cards, print 20 two-digit numbers. Print one number per card. On another set of cards draw place value models of those numbers. Direct students to shuffle the cards, then match the place value model cards to the corresponding number cards. You may wish to make different sets of cards to provide practice with a range of numbers from 1 to 99.

Objective 3: Identify the correct solution to a problem involving number comparison.

This objective requires students to find the smallest or largest number of three numbers.

Sample Item

Teacher says: "Look at the numbers. Find the smallest number. Fill in the space under the smallest number."

72	57	83
○	○	○

Test Question

1. A test item will consist of three numbers. Students will be given oral instructions to find the smallest or largest number.

2. Eligible numbers will be whole numbers from 0 through 99 with intervals of at least 10 between any two numbers.

3. No two numbers in an item will have the same digit in the tens place.

4. No two numbers in an item will have reversed digits.

Answer Choices

1. The correct answer will be the smallest or largest number.

2. Incorrect answer choices will be smaller numbers when asked for the largest or larger numbers when asked for the smallest.

Answer Analysis for Sample Item

1. The first answer, 72, is incorrect. Students who select this answer may have focused only on the one's place.

2. The second answer, 57, is the correct response.

3. The third answer, 83 is incorrect. Students who select this answer may have searched for the largest rather than the smallest number.

Instructional Emphases

To master the skill of number comparison, students must understand the concept of largest and smallest with respect to numbers. They must also be able to count and group numbers by ten. To compare numbers, students must realize that a number represents a set of objects. Given two numbers, the larger number represents the set with more objects than the other set.

To help students understand the concept of largest or smallest, encourage students to make concrete representations of numbers using manipulatives (e.g., unifix cubes, beans, buttons, sticks). You may wish to introduce the concept of number comparison with numbers less than 10. Provide students with two unequal sets of objects or illustrate two sets of objects on the chalkboard. Have students count the number of objects in each set, then write the corresponding number next to each set. Direct students to match an object from one set with an object from another set. After students have matched objects, the set that has objects "left over" is the larger number; the set that "ran out" of objects first is the smaller number.

When comparing numbers greater than 10, provide students with manipulatives that represent units of ten (e.g., ten-blocks, bundles of sticks). Have students count the number of tens and ones in each set, then write the corresponding number next to each set. The set with the most tens represents the largest number. Remind students that if two sets have the same number of tens, they should compare the ones. It is important for students to form the habit of comparing the tens first, then the ones. Students can verify their answers by matching objects ten-to-ten and one-to-one.

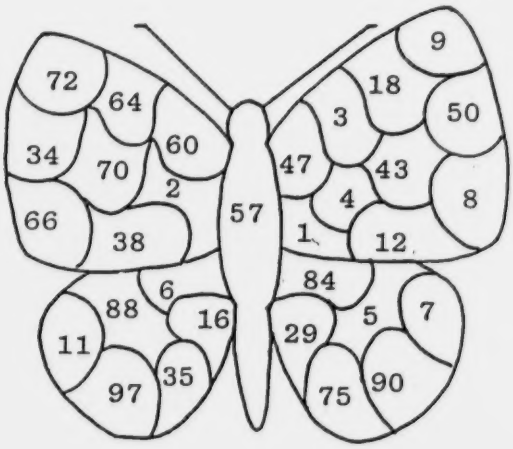
Possible Instructional Activities

Number Cards

Print 20 two-digit numbers on 3" x 5" index cards or strips of oaktag. Print one number per card. Have students select three cards. Students should tell the class which of their three numbers is largest (or smallest). You may wish to draw objects, or place value models on the back of the cards to help students compare numbers.

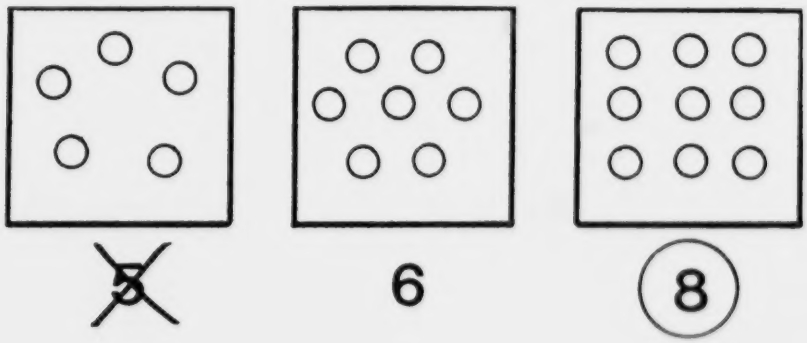
Color By Number

Provide students with numbered pictures to color (for example, a butterfly). Put two-digit numbers from 0 through 99 in different sections of the butterfly's wings and one number in the butterfly's body. Direct students to color in yellow those sections with numbers greater than the number in the butterfly's body. Sections with numbers smaller than the number in the body can be colored in orange.



Compare Numbers

Provide students with three number sets. Each set should depict a number of objects and its corresponding numeral. For numbers larger than ten, use place value model displays or groups of objects that represent units of ten (for example, bundles of pencils.) Students should circle the set with the largest number and cross out the set with the smallest number.



Number Challenge

Print numbers 0 through 99 on 5" x 7" index cards or comparably sized pieces of oaktag. Divide the class into three teams. Shuffle the cards before giving each child a card. The first member of each team should hold up his or her card. Ask students to indicate which number is the largest. The team with the largest number gets a point. After all students have played, distribute more cards and repeat the activity asking students to indicate the smallest number.

SKILL AREA: COMPUTATION

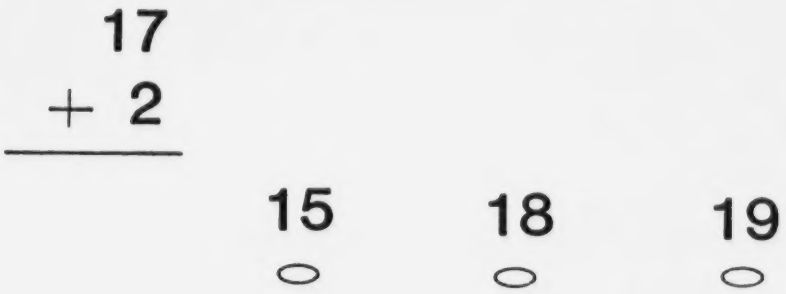
The skill area of computation covers two objectives: addition and subtraction. Students will be required to add two whole numbers whose sum is less than 20 or to subtract a one-digit whole number from a whole number less than 20. Many students will be able to demonstrate mastery of addition and subtraction facts, even extended to three digits. While they may be able to perform this task, it is not necessary for students at this level to do so. The focus in the curriculum is on the concept of addition and subtraction of small numbers.

Objective 4: Add two whole numbers whose sum is less than 20.

This objective requires students to find the correct solution to addition problems with sums less than 20.

Sample Item

Teacher says: "Look at the addition problem. Add 17 and 2. Fill in the space under the right answer."



Test Question

1. A test item will require the student to add two whole numbers whose sum is less than 20. The number problem will be read aloud to students.

2. If a test item involves a two-digit number, that number must appear as the first addend.

3. Test items will be presented in vertical format with the symbol "+."

Answer Choices

1. The correct answer will be the correct solution to the addition problem presented.

2. Incorrect answer choices will be any of the following types:

   a. Basic Operation Error: An error in the addition of single-digit numbers.

   b. Incorrect Operation: Subtracting in an addition problem.

Answer Analysis for Sample Item

1. The first answer choice is incorrect because subtraction was performed instead of addition: $17 - 2 = 15$.

2. The second answer choice is incorrect because of a basic operation error: $7 + 2 \neq 8$.

3. The third answer choice is correct: $17 + 2 = 19$.

Instructional Emphases

Addition can be described as the operation that tells how many in all when two sets of objects are joined together. To master basic addition facts students must first understand (1) that a number represents a specified set of objects (number value) and (2) that numerals represent certain values depending on their location within a number (place value).

In learning addition facts, students should be encouraged to use manipulatives (for example, small objects, place value models, or visual displays), whenever possible. The use of manipulatives helps ensure that students do not just memorize addition facts, but that they gain a conceptual understanding of the operation and the numbers.

You may wish to introduce addition by having students make two sets using manipulatives as counters (for example, beans, buttons, sticks). Ask students to push the two sets together and then count the objects to tell how many in all. The use of manipulatives as concrete representations of objects within sets helps students visualize the concept of joining sets. Providing frequent opportunities for students to actively form and join sets will help students internalize the meaning of the addition operation.

Once students are familiar with the concept of joining sets, introduce them to addition problems presented in the vertical format as tested on the TEAMS test. Use a flannel board with objects cut from flannel (for example, apples, circles) to

demonstrate the meaning of the numbers and the addition operation. Inform students that the first number shows how many there are in one set. The second number shows how many are in the other set. The plus sign means that two sets are being joined or added together. The number below the line is the answer to the problem and tells how many there are in all.

Possible Instructional Activities

Provide students with manipulatives to use as counters for the following instructional activities until such aids are no longer needed by the students.

Roll the Cube

Cut 12 pieces of oaktag into 1 1/2" x 1 1/2" squares. Write one number from 0 through 9 on each square. Tape six squares together to form a cube. Make at least two cubes.

Direct students to roll the cubes and then add the numbers on the top of each cube. Students can play in small groups and compare computations among themselves. If the game is played individually, those students should keep a record of their problems and answers for the teacher to check at a later time.

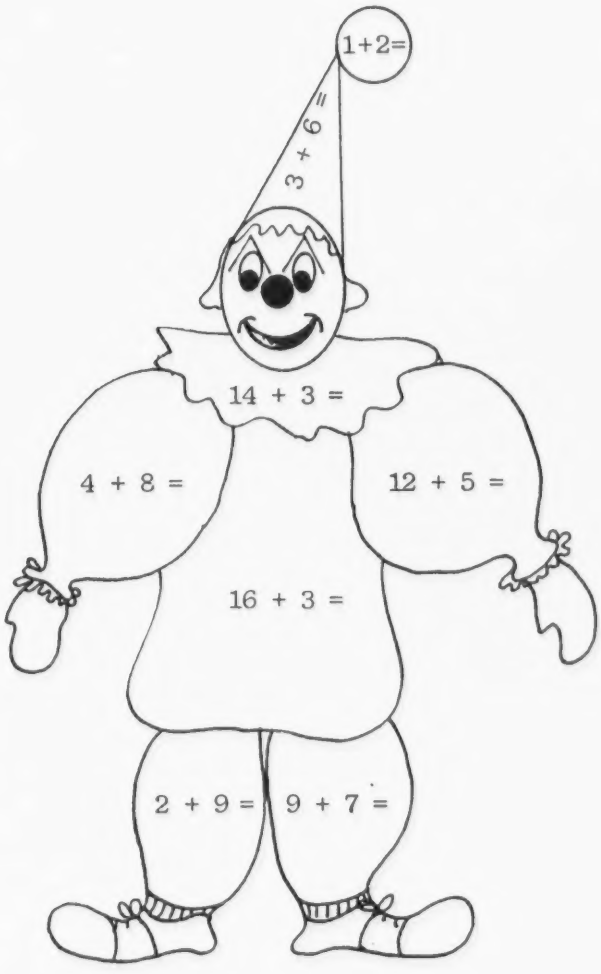
Addition Wheels

Cut a 10" diameter circle out of oaktag. Divide the wheel into 10 segments. Write an addition problem with a sum less than 20 in each pre-shaped segment. Using wooden clothespins, write a number from 1 through 19 on each pin. Direct students to solve each problem and then clip the clothespin with the correct answer onto the correct problem.

Addition Puzzle

Provide students with a picture to color. Different parts of the picture should depict addition problems with sums less than 20. Provide students with a color code, (e.g., color in blue sections with problems that sum to 9, color in green sections with problems that sum to 13. Direct students to solve the problems then refer to the color code to color their picture.

For example:

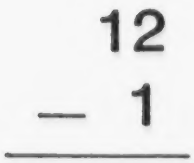


Objective 5: Subtract a one-digit whole number from a whole number less than 20.

This objective requires students to find the correct solution to subtraction problems.

Sample Item

Teacher says: "Look at the subtraction problem. Subtract 1 from 12. Fill in the space under the right answer."



10 ○ 11 ○ 13 ○

Test Questions

1. A test item will require the subtraction of a one-digit whole number from a whole number less than 20. The number problem will be read orally to students.

2. The value of the number being subtracted will be less than the value of the number from which it is subtracted.

3. Test items will be presented in vertical format with the symbol "-."

Answer Choices

1. The correct answer will be the correct solution to the subtraction problem presented.

2. Incorrect answer choices will be any of the following types:

   a. Basic Operation Error: An error in the subtraction of two numbers.

   b. Incorrect Operation: Adding in a subtraction problem.

Answer Analysis for Sample Item

1. The first answer choice is incorrect because of a basic operation error: $2 - 1 \neq 0$.

2. The second answer choice is correct: $12 - 1 = 11$.

3. The third answer choice is incorrect because addition was performed instead of subtraction: $12 + 1 = 13$.

Instructional Emphases

Subtraction may be introduced as the operation that tells how many are left after some number of objects are taken away from a given set. Subtraction requires students to determine the number of objects with which they start, the number taken away, and the number that are left. As you introduce students to subtraction, emphasize the concept of group separation. Use classroom objects such as books or pencils to demonstrate physically the process of taking away and determining the number left. You may wish to have students participate by actively removing objects or by drawing pictures showing the separating process of subtraction. Such activities will help students develop a concrete understanding of subtraction.

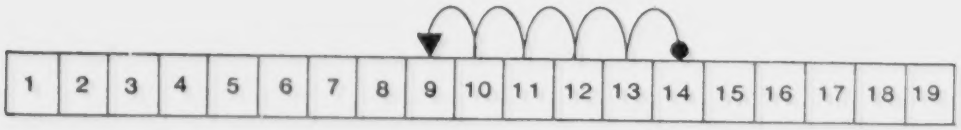
Once students are familiar with the model of taking away objects in a set and counting those that are left, introduce them to the vertical problem format presented in the TEAMS test. Using a flannel board with cutouts, show students that the first number shows how many objects there are to start with. Introduce the minus sign and tell students that it means that some of the objects are going to be taken away. The second number shows how many objects are being taken away. The answer to the problem, or the number below the line, tells how many are left.

During the initial instructional phase, encourage students to think about taking away objects and then counting the remainder. The use of manipulatives is essential for helping students deal with the concept of subtraction in a concrete fashion. As students begin to memorize subtraction facts, they will begin to rely less on manipulatives to help them solve computation problems.

Possible Instructional Activities

Number Line

Make a number line on the floor with masking tape. Present students with a subtraction problem. Have a student volunteer walk to the minuend, and then jump backwards as many hops as the number being subtracted.



$$\begin{array}{r} 14 \\ -\ 5 \\ \hline \end{array}$$

Match the Facts

On 3" x 5" index cards, print problems (in vertical format) which require the subtraction of a one-digit whole number from a whole number less than 10. Make an even number of problems that yield the same answer (for example, answer = 4, problem cards would read 5 - 1, 6 - 2, 4 - 0, 8 - 4). Students place cards face up on the floor or table, then make sets of the subtraction problems that have the same answer.

As a separate activity, make another set of cards with problems that require the subtraction of a one-digit whole number from a whole number more than 10 but less than 20. Have students perform the matching activity with these cards.

Subtraction Bee

On 5" x 7" index cards print problems in vertical format that require the subtraction of a one-digit whole number from a whole number less than 20. (You may wish to use the cards from "Match the Facts.") Starting with the easier problems and progressing to the more difficult problems, present a problem to each student and ask for the correct answer. Students who solve the problem incorrectly drop out of the game. The students who have solved all problems presented to them win the game.

SKILL AREA: PROBLEM SOLVING

Objective 6: Solve a one-step problem involving addition/subtraction of whole numbers.

This objective requires students to solve word problems requiring addition or subtraction.

Sample Item

Subtraction

Teacher says: "Janet has 3 cats. Then 1 cat runs away. How many cats does Janet have now?"

Janet has 3 cats. Then 1 cat runs away.
How many cats does Janet have now?

Test Questions

1. A test item will consist of a word problem requiring addition or subtraction. The word problem will be read aloud to students.

2. For word problems requiring students to add:

   A. A test item will require the addition of two whole numbers.

   B. Eligible numbers will be one-digit whole numbers that sum to 18 or less.

3. For word problems requiring students to subtract:

   A. A test item will require the subtraction of one whole number from another whole number.

   B. The value of the number being subtracted will always be less than the value of the number from which it is subtracted.

C. The number being subtracted will be a one-digit whole number including 0. The maximum value of the number being subtracted from will be 18.

4. Extraneous numerical data will not be presented in any problem.

Answer Choices

1. The correct answer will be the correct solution to the word problem presented.

2. Incorrect answer choices will be any of the following types:

   a. Basic Operation Error: An error in the addition or subtraction of two single-digit numbers.

   b. Incorrect Operation: Adding in a subtraction problem or subtracting in an addition problem.

Answer Analysis for Sample Items

1. The first answer choice is incorrect because addition was performed instead of subtraction: $3 + 1 = 4$.

2. The second answer choice is incorrect because of a basic operation error: $3 - 1 \neq 1$.

3. The third answer choice is correct: $3 - 1 = 2$.

Instructional Emphases

First grade students are required to determine whether they should add or subtract to solve a word problem, then accurately compute its solution. You may wish to introduce this skill by making up addition/subtraction stories using language that clearly shows the joining or separating process. For example, Mary has 4 pencils. She gives 2 pencils to Sam. How many pencils does Mary have now? Consider having children in your class act out the story to help them visualize whether the pencils are being added or subtracted. If students can visualize the action of the story, it will help them to be able to determine the correct operation.

It is important that your students do not expect to see clue words such as "in all" or "left" to help them determine the operation for a problem. In the TEAMS items for this skill, the test question, "How many does (character of story) have now?" specifically excludes such clues. Students are required to focus on the information provided in the problem to determine the correct operation.

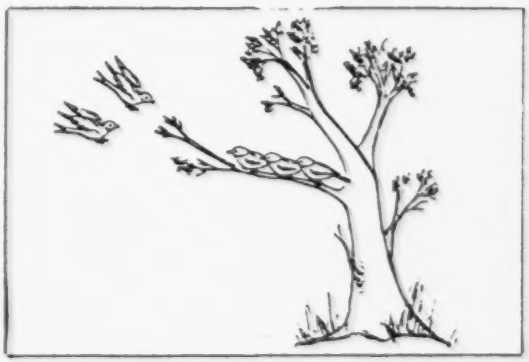
You may wish to use a flannel board to show students how to set up problems in a vertical format. Remind students that the first number in the word problem is the number that represents the set of objects that you start with. It is the first number or the top number in a problem written in a vertical format. The second number is the set that is either being joined or taken away from the first set. Flannel cutouts can be used to demonstrate the joining or separating process.

Students should work initially with manipulatives to help them compute the solution to word problems. Encourage students working without manipulatives to check their work by drawing pictures depicting the two sets and then counting.

Possible Instructional Activities

Choose the Operation

Provide students with pictures of groups of animals. Some of the pictures should show a number of animals leaving the group, other pictures should show a number of animals coming to the group. Under each picture, print a minus (-) and plus (+) sign. Direct students to look at each picture, then decide whether the animals are joining the group or if some of the group are leaving. If the groups are being joined, students should circle the (+) sign. If some of the group are leaving, students should circle the (-) sign.



Choose the Number Problem

Provide students with a word problem requiring addition or subtraction followed by two vertical displays of the problem. Direct students to choose the number problem described in the word problem, then compute the solution to the problem.

There are 7 glasses on the table. Mary puts 2 more glasses on the table. How many glasses are on the table?

$$\begin{array}{r} 7 \\ +\ 2 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ -\ 2 \\ \hline \end{array}$$

After students have mastered this task, provide word problems without the associated number problems. Ask students to develop the number problem that matches each word problem. Provide students with help in setting up the problems correctly.

On Stage

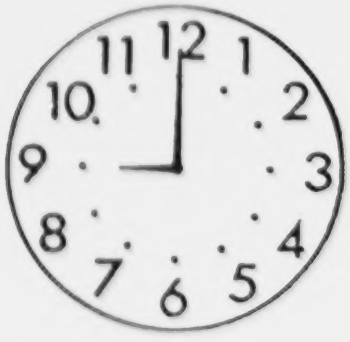
Create addition/subtraction word problems using objects available in the classroom (e.g., books, pencils, crayons). Ask two student volunteers to come up to the front of the class. Read the word problem out loud using the student volunteers' names in the story. Ask students to act out the story. Have objects available in sufficient quantity for students to demonstrate the joining or separating process.

Objective 7: Identify the correct time to the hour or half-hour.

This objective requires students to look at a display of a standard clock and identify the time to the hour or half-hour.

Sample Item

Teacher says: "Look at the picture of the clock. What time does the clock show? Fill in the space which shows what time the clock shows."



10:00 ○ 9:30 ○ 9:00 ○

Test Questions

1. A test item will consist of a clock face depicting a time to the hour or half-hour.

2. Students will be given oral instructions to find the time shown on the clock.

Answer Choices

1. The correct answer will be the time shown on the clock.

2. Incorrect answer choices will be times, other than that shown on the clock, to exact hours or half-hours.

Answer Analysis for Sample Item

1. The first answer choice is incorrect because the hour hand points to 9, not 10.

2. The second choice is incorrect because the minute hand points to 12, not 6.

3. The third answer choice is the correct reading of the time shown.

Instructional Emphases

You may wish to introduce the concept of time by asking students to think about how long it takes to do certain activities. Have students think about what takes longer, brushing your teeth or taking a bath, filling a glass of water or filling the bathtub with water. You may also wish to stress the importance of time in everyday life. For example, school starts and ends at the same time everyday, movies start at set times, etc.

You may wish to introduce students to clocks by having students make a clock with moveable hands. (Use paper plates, construction paper, crayons and paper fasteners.) Ask students to describe the parts of a clock. Point out that there are two hands that are of different lengths. Introduce the short hand as the hour hand because it shows the hour. The long hand is the minute hand because it shows the minutes.

Have students practice showing times to the hour and half-hour on their clocks. To reinforce student mastery of this skill provide frequent opportunities for students to identify time associated with the class schedule (for example, time for lunch, recess, art. In addition, you may wish to have students use their clocks to show how long certain activities last (for example, lunch, a television show.)

Possible Instructional Activities

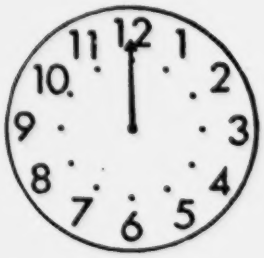
Time Match

Print times (to the hour and half-hour) on 3" x 5" index cards. Print one time on each card. On another set of cards, draw pictures of clocks showing these times. Students should shuffle the cards keeping each set separate. One set of cards should be spread out on the floor or on the table with the times or clock pictures face up. Students then match one set of cards to the other set. Students collect pairs of cards that have been matched correctly. The student with the most pairs wins the game.

Missing Hour Hands

Provide students with pictures of clocks that show the minute hand pointing to 12, with the hour hand missing. Under each picture, print the time to the hour that the clock should show. Direct students to read the time under the clock and draw in the hour hand that tells that time. Remind the students that the hour hand is shorter than the minute hand.

This same activity can be used to provide practice with time showing the half-hour. Provide pictures of clocks with the minute hand pointing to 6 and the hour hand missing and clocks with the hour hand pointing between two numbers with the minute hand missing. Under each picture, print the time to the half-hour that the clocks should show. Have students draw in the hour hand or minute hand.



3:00

1:30

1:30

Fishing for Time

Use the sets of cards developed for the game "Time Match." Have students shuffle both sets of cards together. In groups of three or four, have students deal cards to players. Players take turns picking one card from the hand of the player to their right. If a player gets two cards with the same time, the cards are placed face up on the table. The first player to put down all his/her cards wins the game.

Activity Time

Ask students to name activities that they usually do every day. For example, get out of bed, eat breakfast, go to school, do math, go out to recess, etc. Write these activities on the chalkboard.

Provide students with a clock that has moveable hands. Call on a volunteer to use the clock to show what time he/she does a certain activity (for example, get out of bed). The student then gets to pick another activity and call on another student to

demonstrate the time associated with the new specified activity. Repeat this process until several students have had a turn. Remind students that they can mention the activities written on the chalkboard or they can make up different activities.

What's the Time?

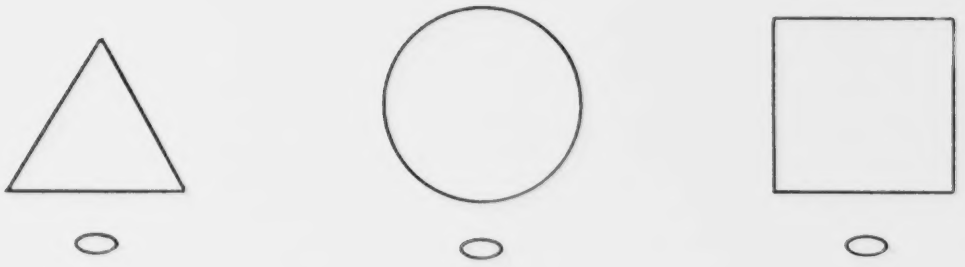
When the classroom clock shows time to the hour or half-hour, ask a student volunteer to tell the time. You may wish to have students tell the time associated with classroom or school activities (for example, 12:00 for lunch, 10:30 for recess). Call on a student to fill in the blanks "It is _____. It is time for _____." (time / activity)

Objective 8: Identify a named geometric shape.

This objective requires students to identify circles, rectangles, squares, and triangles.

Sample Item

Teacher says: "Look at the pictures. Find the circle. Fill in the space under the circle."



Test Questions

1. A test item will consist of oral instructions to find a particular geometric shape.

2. Eligible geometric shapes will be circles, rectangles, squares, and triangles. Shapes may vary in dimension and orientation.

Answer Choices

1. The correct answer choice will be a pictured display of the specified geometric figure.

2. Incorrect answer choices will be pictured displays of geometric figures not specified by the test question.

3. Eligible incorrect answer choices will be any of the following geometric shapes: circles, rectangles, squares, triangles, ovals, quadrilaterals, and pentagons.

4. Shapes not eligible as answer choices for items testing the following geometric figures are:

   a. Squares: Rectangles and quadrilaterals

   b. Rectangles: Squares and quadrilaterals

   c. Circles: Ovals

Answer Analysis for Sample Item

1. The first answer choice is incorrect because it depicts a triangle.

2. The second answer choice is correct. It depicts a circle which is the requested shape.

3. The third answer choice is incorrect because it depicts a square.

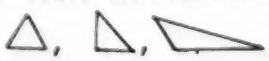
Instructional Emphases

Students can best learn the properties of shapes through observation, manipulation, and comparison. You may wish to provide students with their own set of shapes. When introducing geometric shapes, show the shape to students, name it, then have students pick out the corresponding shape from their own set. Direct students to feel the shape with their fingers. Discuss the characteristics of different shapes, focusing on the corners, the number and length of straight sides, and curves. For example, you may wish to point out the following features about the four shapes:

Circles: Circles are shapes that can roll. They have no straight edges or corners.

Squares: Squares have four corners and four straight sides that are all the same length.

Rectangles: Rectangles, like squares, have four corners and four straight sides, but two sides are longer than the other two sides.

Triangles: Triangles have three corners and three straight sides. Triangles can look different from each other. For example: 

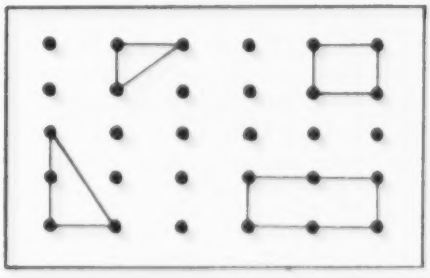
You may wish to encourage students to find objects in the classroom or outdoors that are in the shapes of circles, squares, rectangles, or triangles. Have students compare size and shape to see if size changes the geometric shape. Activities that require students to draw or color geometric shapes will also help reinforce mastery of this skill.

Possible Instructional Activities

Geoboards

Make a large geoboard or use a commercially made geoboard. To make a geoboard, cut a rectangular piece of wood (8" x 18"), then hammer nails into the board, allowing 1" between nails (horizontally and vertically).

Using colored rubber bands of different sizes, direct students to stretch the rubber bands around the nails to create triangles, rectangles, and squares of different sizes and orientations.



Picture Frames

Ask students to bring in family pictures that are of different sizes and shapes. You may wish to supplement the collection to ensure that some pictures are circular. You will also need to cut pictures out of magazines to make pictures that are triangular in shape. Using colored construction paper, make picture frames of different shapes and sizes that will fit the pictures in the collection.

Direct students to put a frame around each picture. Students must attend to both shape and size to ensure a correct fit.

Guess the Shape

Place different sized circles, rectangles, squares and triangles in a bag. Include triangles of different shapes in the collection. Have one student come up to the front of the class. Put a blindfold on the student, then ask the student to put his/her hand in the bag and select a shape. The student should run his/her fingers around the edges of the shape to guess the shape.

What is It?

This activity challenges students to find classroom objects in the shapes of geometric figures. You start the game by thinking of an object in the shape of a geometric figure. The object should be clearly visible to children sitting in the classroom. Say, "I am thinking of something. It is in the shape of a _____." (geometry shape) Then give additional clues such as its color, size, use, or location. Ask students to guess what the object might be.

Shape Book

Provide students with four sheets of construction paper. Direct students to draw one of the four geometric shapes at the top of each page. Have students look through magazines and cut out pictures in each of the four shapes. Students should paste their pictures on the page with the same shape at the top. Staple the four pages together to create a book.